Economic Analysis of an Information Technology-Assisted Population-Based Cancer Screening Program

Principal Investigator: Levy, Douglas, Ph.D., M.P.H.
Organization: Massachusetts General Hospital
Mechanism: PAR: HS08-268: Small Research Grant to Improve Health Care Quality through Health Information Technology (IT) (R03)
Grant Number: R03 HS 020308
Project Period: March 2011 – February 2013
AHRQ Funding Amount: $100,000

Summary: The Massachusetts General Hospital Primary Care Practice-Based Research Network (MGPC PBRN) has developed an innovative health information technology (IT) approach that is being applied to comprehensive cancer screening. The program, Technology for Optimizing Population Care in a Resource-limited Environment (TOP-CARE), uses a health IT interface to facilitate the identification, individualized outreach, and subsequent tracking of patients overdue for breast, cervical, and colorectal cancer screening.

The purpose of this project is to study TOP-CARE's impact on improvements beyond the use of automated reminders, particularly with regard to its unique outreach strategy, which is based on the provider's individual knowledge of each of his or her patients. More specifically, this is an economic analysis of alternative strategies for improving cancer-screening rates in the context of a large provider organization. Utilizing data that was collected during an initial randomized trial on costs, preferences, and clinical and process outcomes, this study will compare increasingly intensive interactions from baseline standard of care (BSC) and augmented standard care (ASC) to the TOP-CARE intervention. For the purpose of this study, BSC refers to visit-based reminders, whereas ASC is defined as a population-level reminder system with automated patient outreach. TOP-CARE is more intense than BCS or ACS due to its individualized outreach approach.

By examining the incremental cost-effectiveness of increasingly intensive interventions, this project is assessing the impact of technologically improved care management in large primary care networks. The analysis will determine the extent to which investments in health IT systems, combined with primary care providers' knowledge of their patients, yield improvements in breast, cervical, and colorectal cancer screening rates. Ultimately, the study will help determine whether ASC and TOP-CARE interventions are worth the additional investment in health IT and physician time. Evaluating the efficiency of health IT-assisted population-based care is essential to determine if it is a strategy worth disseminating broadly.

In order to achieve the project aim, the study team established five milestones: 1) gathering wage data; 2) developing BSC time-use estimates from surveys; 3) developing time-use estimates from survey data and direct observation for the TOP-CARE intervention and ASC; 4) developing software cost estimates; and 5) conducting the cost-effectiveness and sensitivity analyses.

Specific Aim:

- Evaluate the marginal cost per patient screened of the TOP-CARE and augmented standard care programs compared to baseline standard care from an initial cash outlay perspective. **(Ongoing)**

2012 Activities: The focus of activity was on completing the collection of wage data, developing the time-use estimates from direction observation, and developing the software cost estimates. Dr. Levy and his study team received wage data for physicians, navigators, and delegates, and staff responsible for managing patient responses to the TOP-CARE-related mailings. The data was used to determine an average hourly rate for various levels of staff. These rates were then used to calculate the estimated costs associated with cancer screening using TOP-CARE and ASC programs compared to BSC.

Dr. Levy and his project manager visited two clinics participating in TOP-CARE to observe how staff interacted with the tool and to observe time use. In addition to clinic staff, delegates and physicians were observed to track the amount of time it took delegates to contact patients on their list and how long it took physicians to review the patient record using the TOP-CARE tool. When physicians could not be observed, a self-timed measurement was used to supplement the data. Subsequent to direct observations and self-timed measurements, the project team fielded a followup study to capture any changes relative to the time use that was measured at baseline. The study team then analyzed the changes in time use.

The development of software cost estimates was achieved with assistance from a technology consultant who developed a full report that estimated the cost of implementing the TOP-CARE tool and included a detailed list of all the cost components.

As last self-reported in AHRQ's Research Reporting System, project progress and activities are on track in some respects but not others and project budget spending is on target. In 2012 there was some delay in data availability as well as a slight reduction in the amount of time Dr. Levy was available to devote to the project, which resulted in the need to use a 6-month no-cost extension through the end of February 2013. A programmer-analyst was hired to help Dr. Levy complete the analysis and write up the results by the end of the no-cost extension period.

Preliminary Impact and Findings: The project has no findings to date.

Target Population: Adults, Cancer

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to improve health care decisionmaking through the use of integrated data and knowledge management.

Business Goal: Knowledge Creation
